

# Service Manual

## Microwave Oven

Model No. NN-SM32HMYTE

Model No. NN-SM33HMYTE




**23L**  
**Silver**  
**SINGAPORE**

### **WARNING**

This service information is designed for experienced repair technicians only and is not designed for use by the general public. It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product. Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

### **IMPORTANT SAFETY NOTICE**

There are special components used in this equipment which are important for safety. These parts are marked by  in the Schematic Diagrams, Circuit Board Diagrams, Exploded Views and Replacement Parts List. It is essential that these critical parts should be replaced with manufacturer's specified parts to prevent shock, fire or other hazards. Do not modify the original design without permission of manufacturer.

### Specifications

	NN-SM32HMYTE	NN-SM33HMYTE
Power Requirement	220 Volts AC 50 Hz 750 Watts (3.6 A) Single phase, 3 wire grounded	220 Volts AC 50 Hz 1270 W (5.9 A) Single phase, 3 wire grounded
Power Output	450 Watts full microwave power (IEC60705)	800 Watts full microwave power (IEC 60705)
Microwave Frequency	2,450 MHz	
Magnetron	2M217J	
Timer	0 ~ 35 min.	
Outside Dimensions	485 (W) x 287 (H) x 400 (D) mm	
Cavity Dimensions	315 (W) x 227 (H) x 349 (D) mm	
Net Weight	12.7kg (approx.)	
Shipping weight	14.7 kg (approx.)	
Specifications subject to change without notice.		

#### WARNING

This product should be serviced only by trained qualified personnel.

This service manual covers products for following markets.

When troubleshooting or replacing parts, please refer to the country identifications shown below for your applicable product specification.

YTE..... For Singapore (Re-export)

#### CAUTION

##### About lead free solder (PbF)

**Distinction of PbF PCB:** PCBs (manufactured) using lead free solder will have a PbF stamp on the PCB.

**Caution:** ● Pb free solder has a higher melting point than standard solder; Typically the melting point is 30 - 40°C higher.

Please use a high temperature soldering iron. In case of the soldering iron with temperature control, please set it to  $370 \pm 10^{\circ}\text{C}$ .

● Pb free solder will tend to splash when heated too high (about  $600^{\circ}\text{C}$ )

## SAFETY PRECAUTIONS

This device is to be serviced only by properly qualified service personnel.

Consult the service manual for proper service procedures to assure continued safety operation and for precautions to be taken to avoid possible exposure to excessive microwave energy.

### PRECAUTIONS TO BE OBSERVED BEFORE AND DURING SERVICING TO AVOID POSSIBLE EXPOSURE TO EXCESSIVE MICROWAVE ENERGY

- A) Do not operate or allow the oven to be operated with the door open.
- B) Make the following safety checks on all ovens to be serviced before activating the magnetron or other microwave source, and make repairs as necessary; (1) interlock operation, (2) proper door closing, (3) seal and sealing surfaces (arcing, wear, and other damage), (4) damage to or loosening of hinges and latches, (5) evidence of dropping or abuse.
- C) Before turning on microwave power for any service test or inspection within the microwave generating compartments, check the magnetron, wave guide or transmission line, and cavity for proper alignment, integrity, and connections.
- D) Any defective or misadjusted components in the interlock, monitor, door seal, and microwave generation and transmission systems shall be repaired, replaced, or adjusted by procedures described in this manual before the oven is released to the owner.
- E) A microwave leakage check to verify compliance with the Federal Performance Standard should be performed on each oven prior to release to the owner.

#### CAUTION

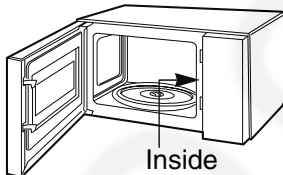
##### MICROWAVE RADIATION

DO NOT BECOME EXPOSED TO RADIATION FROM THE MICROWAVE GENERATOR OR OTHER PARTS CONDUCTING MICROWAVE ENERGY.

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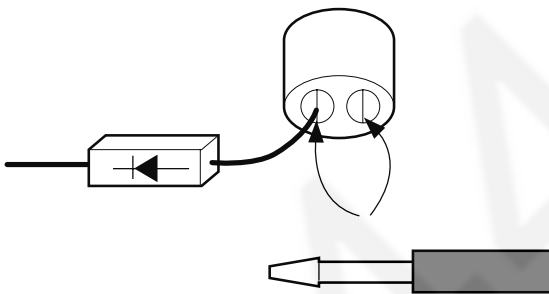
## POWER LEVEL & ACCESSORIES

ITEM	DESCRIPTION												
Control Complement	<div>Microwave Power for Variable Cooking</div> <div>Power level</div> <table><thead><tr><th></th><th>NN-SM32HMYTE</th><th>NN-SM33HMYTE</th></tr></thead><tbody><tr><td>High</td><td><b>450 Watts</b></td><td>High <b>800 Watts</b></td></tr><tr><td>Medium</td><td><b>231 Watts</b></td><td>Medium <b>411 Watts</b></td></tr><tr><td>Low</td><td><b>130 Watts</b></td><td>Low <b>232 Watts</b></td></tr></tbody></table>		NN-SM32HMYTE	NN-SM33HMYTE	High	<b>450 Watts</b>	High <b>800 Watts</b>	Medium	<b>231 Watts</b>	Medium <b>411 Watts</b>	Low	<b>130 Watts</b>	Low <b>232 Watts</b>
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Low	<b>130 Watts</b>	Low <b>232 Watts</b>											
Rating Label Location													
Accessories	<div>Instruction manual</div> <div>Glass Tray</div> <div>Roller Ring</div>												
<div>This microwave oven is designed for household use only.</div> <div>It is not recommended for commercial purposes.</div>													

# CAUTIONS

Unlike other appliances, the microwave oven is high-voltage and high-current equipment. Though it is free from danger in ordinary use, extreme care should be taken during repair.

- DO NOT operate on a 2-wire extension cord during repair and use.
- NEVER TOUCH any oven components or wiring during operation.
- BEFORE TOUCHING any parts of the oven, always remove the power plug from the outlet.
- For about 30 seconds after the oven stops, an electric charge remains in the high voltage capacitor. When replacing or checking, you must discharge the high voltage capacitor by shorting across the two terminals with an insulated screwdriver.

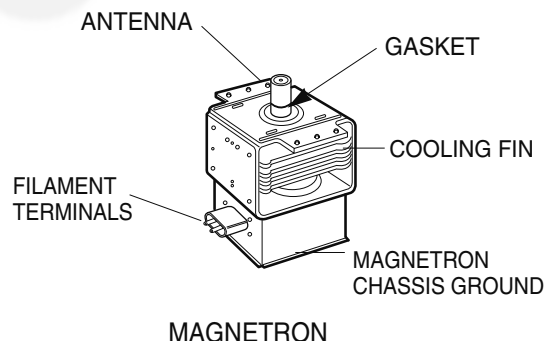


- Remove your watches whenever working close to or replacing the Magnetron.
- NEVER operate the oven with no load.
- NEVER injure the door seal and front plate of the oven cavity.
- NEVER put iron tools on the magnetron.
- NEVER put anything into the latch hole and the interlock switches area.

## MICROWAVE RADIATION

Personnel should not be exposed to the microwave energy which may radiate from the magnetron or other microwave generating device if it is improperly used or connection. All input and output microwave connections, waveguide, flange and gasket must be secure never operate the device without a microwave energy absorbing load attached. Never look into an open waveguide or antenna while the device is energized.

- Proper operation of the microwave oven requires that the magnetron be assembled to the waveguide and cavity. Never operate the magnetron unless it is properly installed.
- **Be sure that the magnetron gasket is properly installed around the dome of the tube whenever installing the magnetron.**



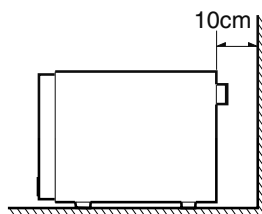
**THE OVEN IS TO BE SERVICED ONLY BY PROPERLY QUALIFIED SERVICE PERSONNEL.**

# INSTALLATIONS

**BEFORE YOU BEGIN, READ THE FOLLOWING INSTRUCTIONS COMPLETELY AND CAREFULLY.**

## INSTALLING

1. Empty the microwave oven and clean inside it with a soft, damp cloth. Check for damage such as misaligned door, damage around the door or dents inside the cavity or on the exterior.
2. Put the oven on a counter, table, or shelf that is strong enough to hold the oven and the food and utensils you put in it. (The control panel side of the oven is the heavy side. Use care when handling.)
3. Do not block the vent and the air intake openings. Blocking vent or air intake openings can cause damage to the oven and poor cooking results. Make sure the microwave oven legs are in place to ensure proper air flow.
4. The oven should not be installed in any area where heat and steam are generated, because they may damage the electronic or mechanical parts of the unit.  
Do not install the oven next to a conventional surface unit or above a conventional wall oven.
5. Use microwave oven in an ambient temperature less than 104°F(40°C).
6. Place the microwave oven on a sturdy and flat surface at least 10 cm(4 inches) from the wall.
7. Place the microwave oven as far away as possible from TV, RADIO, COMPUTER, etc., to prevent interference.



## EARTHING INSTRUCTIONS

This microwave oven is designed to be used in a fully earthed condition.

It is imperative, therefore, to make sure it is properly earthed before servicing

## WARNING- THIS APPLIANCE MUST BE EARTHED

### IMPORTANT

The wires in this mains lead are colored in accordance with the following code:

<b>Green:</b>	<b>Earth</b>
<b>White:</b>	<b>Neutral</b>
<b>Black:</b>	<b>Live</b>

As the colors of the wires in the mains lead of this appliance may not correspond with the colored markings identifying the terminals in your plug, proceed as follows.

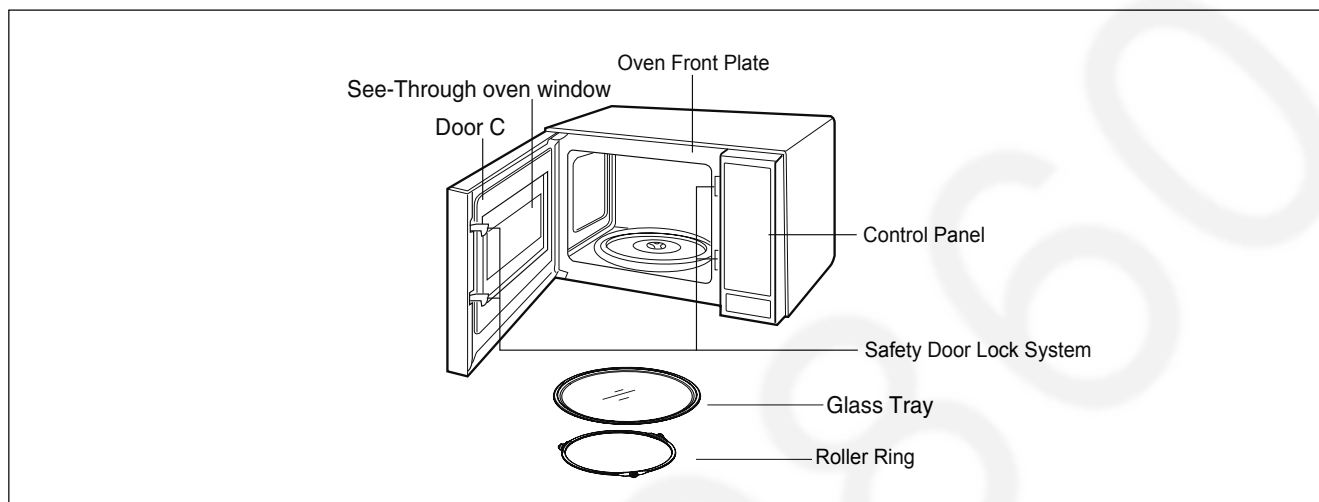
The wire which is colored **green** must be connected to the terminal in the plug which is marked with the letter **E** or by the **earth symbol** ( $\perp$ ) or colored **green** or **green-and-yellow**.

The wire which is colored **white** must be connected to the terminal in the plug which is marked with the letter **N** or colored **black**.

The wire which is colored **black** must be connected to the terminal in the plug which is marked with the letter **L** or colored **red**.

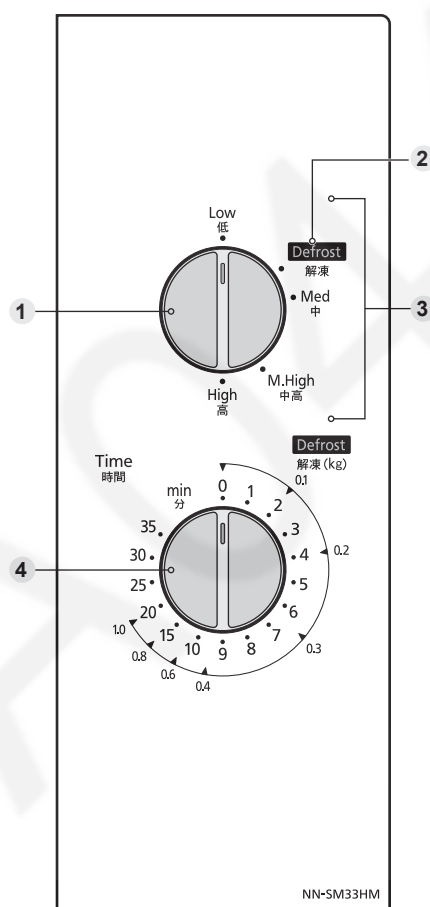
# OPERATING INSTRUCTIONS

## FEATURES



## CONTROL PANEL

### NN-SM33HM/W, NN-SM32HM Control panel



- 1 Cooking mode select dial
- 2 Defrost power
- 3 Microwave power
- 4 Time/weight select dial

# OPERATING SEQUENCE

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## MICROWAVE COOKING

1. Open the oven door, place the food on the turntable in the oven, and close the oven door.
2. Set the microwave power selector to the desired power level. There are five power levels from Low to High. The power selector can be set to any one of these positions.

Power Level	Example of Use
High	Boil water. Cook fresh fruit, vegetables, rice, pasta and noodles.
Medium High	Cook poultry, meat, cakes and desserts. Heat milk.
Medium	Cook eggs, cheeses, fish, pot roasts, casseroles and meat loaves. Melt chocolate.
Defrost	Thaw foods.
Low	Keep cooked foods warm, simmer slowly.

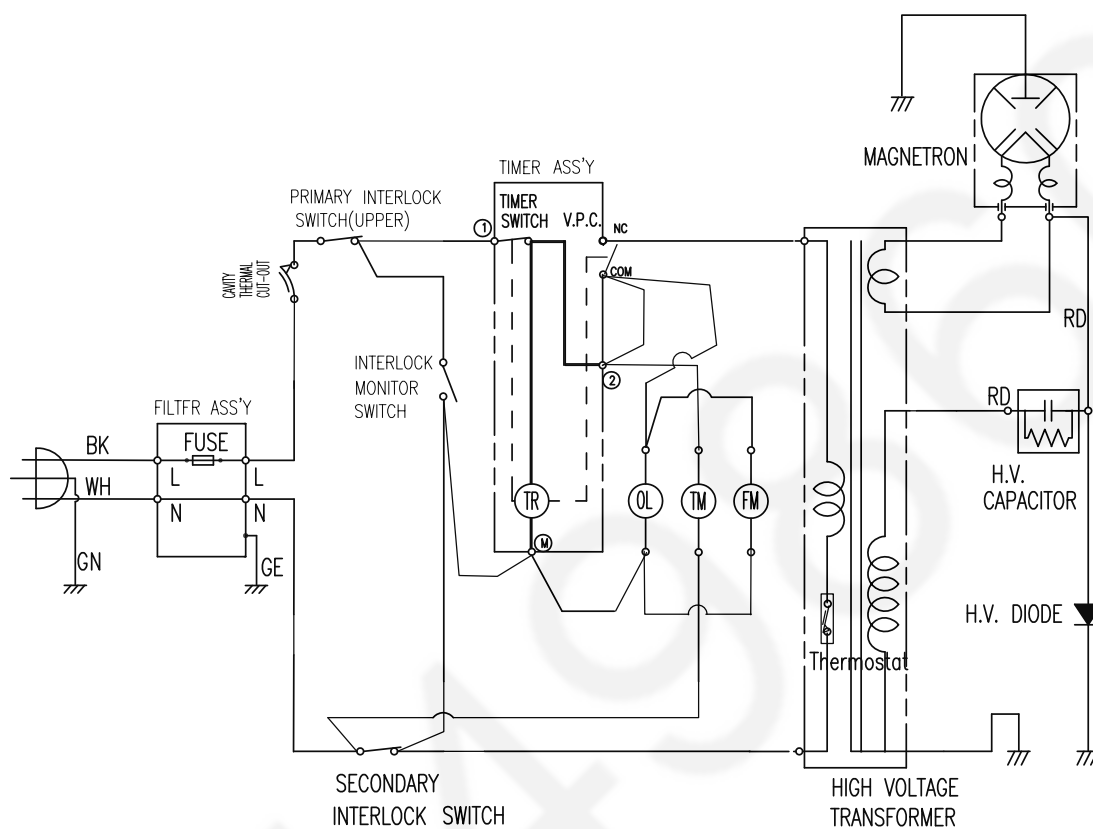
3. Set the timer to the desired cooking time. The turntable begins to rotate and cooking starts. At the end of cooking time you will hear a single ring sound, and the lamp is turned off.

### NOTE:

- Each number represents minutes. To ensure accurate timing, it is advisable to turn the timer knob slightly past the desired cooking time and then back to the proposed setting.
- Press the door opener to check the cooking condition during oven operation. Opening the door during oven operation automatically turns off the oven and stops the timer. If cooking is to continue, close the door. Cooking will be resumed until the full cooking time has elapsed.



# SCHEMATIC DIAGRAM



[ CONDITION ]  
 DOOR : CLOSED  
 TIMER : OFF  
 V.P.C. : HIGH

OL : OVEN LAMP  
 FM : FAN MOTOR  
 TM : TRAY MOTOR  
 TR : TIMER MOTOR  
 V.P.C.: VARIABLE POWER CONTROLLER

BEFORE SERVICING Discharge the high voltage Capacitor by shorting the negative high voltage Terminal of it to chassis ground.

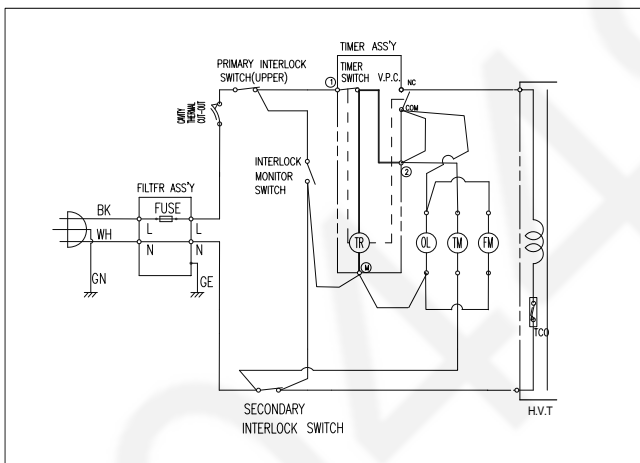
SYMBOL	COLOR
GE	GREEN-YELLOW
WH	WHITE
BK	BLACK
BL	BLUE
RD	RED
YW	YELLOW
GN	GREEN

# CIRCUIT DESCRIPTION

- As the door is closed, the contact of MONITOR SWITCH opens. This switch creates the short circuit to blow fuse during operation under abnormal condition. (ie, should the contacts of primary and secondary switch fail to open the circuit)
- The latches are secured by door hook. The oven light turns on while the oven is in operation.

## WHEN MICROWAVE POWER LEVEL AND COOKING TIME SET

- The contacts of the timer switch changes to ON position when the timer knob is rotated. (While power control knob is set at "HIGH")
- The contacts of primary and secondary switch close the circuit.
- Input Volts AC. the slow acting relay assy works and connect the circuit. Electricity apply to the high voltage transformer and the microwave oven begin to operate.



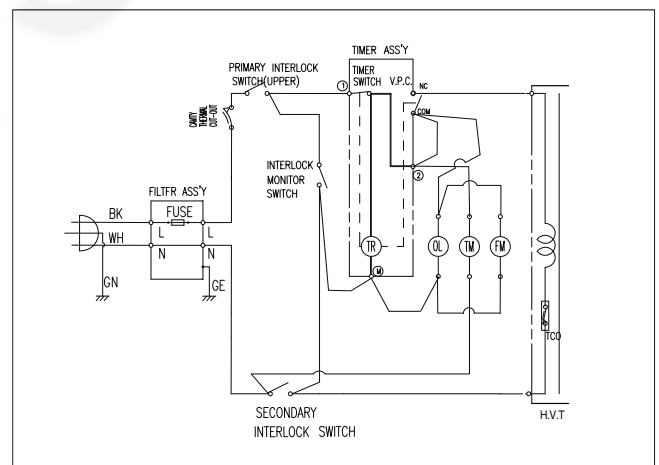
- Turntable rotates.
- The fan motor rotates and cools the magnetron by blowing the air (coming from the intake holes on the baseplate) over the magnetron.
- The air is also directed into the oven to exhaust the vapor in the oven through the upper plate.
- Timer starts rotating.

- 3.2 volts AC is generated from the filament winding of the high voltage transformer. This 3.2 volts is applied to the magnetron to heat the magnetron filament through two noise preventing choke coils.

A high voltage of approximately 2100 volts AC is generated in the secondary of the high voltage transformer which is increased by the action of the diode and charging of the high voltage capacitor. The negative DC voltage is then applied to the filament of the magnetron.

## WHEN THE DOOR IS OPENED DURING COOKING

- Both primary switch and secondary switch open to cut off the primary winding voltage to the high voltage transformer to stop microwave oscillation.
- Timer, turntable and fan motor stop.
- As the door is opened, if the contact of primary switch and secondary switch fail to open, the fuse opens due to the large current surge caused by the monitor switch activation which in turn stops magnetron, oscillation.



# SERVICE INFORMATION

## TOOLS AND MEASURING INSTRUMENTS

### NECESSARY TOOLS

Tools normally used for TV servicing are sufficient. Standard tools are listed below.

- Diagonal pliers
- Long nose pliers
- Phillips screwdriver
- Flat blade screwdriver
- Wrench (size 5mm)
- Nutdriver (size 5mm)
- Adjustable wrench
- Soldering iron
- Solder
- Vinyl insulation tape
- Polishing cloth

### NECESSARY MEASURING INSTRUMENTS

- TESTER(VOLTS-DC, AC., Ohmmeter)
- Microwave survey meter
  - Holaday HI-1500
  - HI-1501
  - Narda 8100
  - 8200
- Inch scale
- 600 cc non conductive material beaker (glass or plastic), inside diameter: approx. 8.5 cm(3<sup>1</sup>/<sub>2</sub> in.)
- Cylindrical and made of borosilicate glass vessel.
  - max. thickness: 3 mm
  - outside diameter: approx. 190mm
  - height: approx. 90mm
- Glass thermometer: 100°C or 212°F (1 deg scale)

## MICROWAVE LEAKAGE TEST

### CAUTIONS

- Be sure to check microwave leakage prior to servicing the oven if the oven is operative prior to servicing.
- The service personnel should inform the manufacture importer, or assembler of any certified oven unit found to have a microwave emission level in excess of 5 mW/cm<sup>2</sup> and should repair any unit found to have excessive emission levels at no cost to the owner and should ascertain the cause of the excessive leakage. The service personnel should instruct the owner not to use the unit until the oven has been brought into compliance.
- If the oven operates with the door open, the service personnel should:
  - Tell the user not to operate the oven.
  - Contact the manufacturer.
- The service personnel should check all surface and vent openings for microwave leakage.
- Check for microwave leakage after every servicing. The power density of the microwave radiation leakage emitted by the microwave oven should not exceed 4 mW/cm<sup>2</sup>. Always start measuring of an unknown field to assure safety for operating personnel from radiation leakage.

### MEASURING MICROWAVE ENERGY LEAKAGE

- Pour 275±15cc of 20±5°C(68±9°F) water in a beaker which is graduated to 600 cc, and place the beaker on the center of the turntable.
- Set the energy leakage monitor to 2450 MHz and use it following the manufacturer's recommended test procedure to assure correct result.
- When measuring the leakage, always use the 2-inch (5cm) spacer supplied with the probe.
- Operate the oven at its maximum output.
- Measure the microwave radiation using and electromagnetic radiation monitor by holding the probe perpendicular to the surface being measured

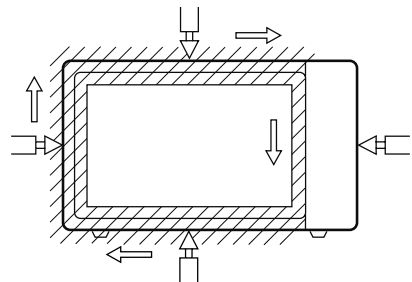
Move probe along shaded area

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Probe scanning speed

Less than 2.5 cm/sec

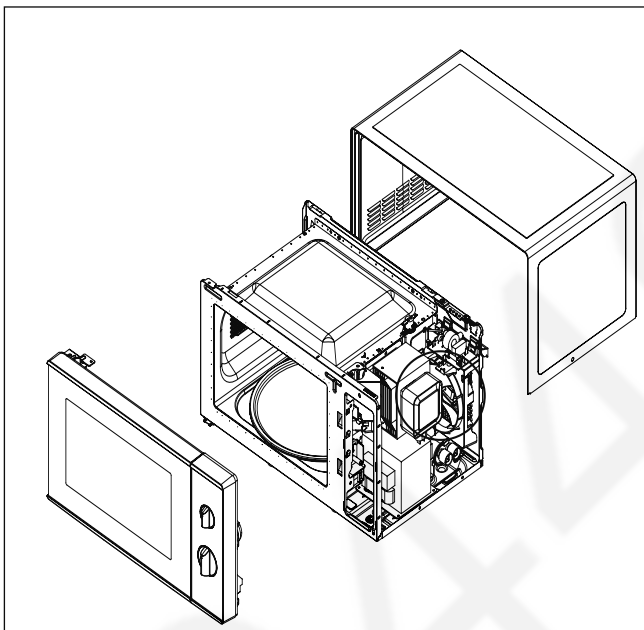
( 1in/sec)



## **MEASUREMENT WITH OUTER CASE REMOVED**

- When you replace the magnetron, measure for microwave energy leakage before the outer case is installed and after all necessary components are replaced or adjusted.  
Special care should be taken in measuring the following parts. (Circled area of below Fig.)
  - Around the magnetron
  - The waveguide

**WARNING : AVOID CONTACTING ANY HIGH VOLTAGE PARTS**



## **MEASUREMENT WITH A FULLY ASSEMBLED OVEN**

- After all components, including the outer case, are fully assembled, measure for microwave energy leakage around the door viewing window, the exhaust opening, and air inlet openings.
- Microwave energy leakage must not exceed the values prescribed below.

**NOTE:** Leakage with the outer case removed less than 5 mW/cm<sup>2</sup>.sq. Leakage for a fully assembled oven (Before the latch switch (primary) is interrupted) with the door in a slightly opened position less than 2 mW/cm<sup>2</sup>.sq.

## **NOTES WHEN MEASURING**

- Do not exceed meter full scale deflection.
- The test probe must be removed no faster than 1 inch/sec (2.5 cm/sec) along the shaded area, otherwise a false reading may result.
- The test probe must be held with the grip portion of the handle.  
A false reading may result if the operator's hand is between the handle and the probe.
- When testing near a corner of the door, keep the probe perpendicular to the surface making sure the probe horizontally along the oven surface, this may possibly cause probe damage.

## **RECORD KEEPING AND NOTIFICATION AFTER MEASUREMENT**

- After adjustment and repair of any microwave energy interruption or microwave energy blocking device, record the measured values for future reference. Also enter the information on the service invoice.
- The microwave energy leakage should not be more than 4 mW/cm<sup>2</sup>.sq. after determining that all parts are in good condition, functioning properly and genuine replacement parts which are listed in this manual have been used.
- At least once a year, have the electromagnetic energy leakage monitor checked for calibration by its manufacturer.

# MEASUREMENT OF MICROWAVE POWER OUTPUT

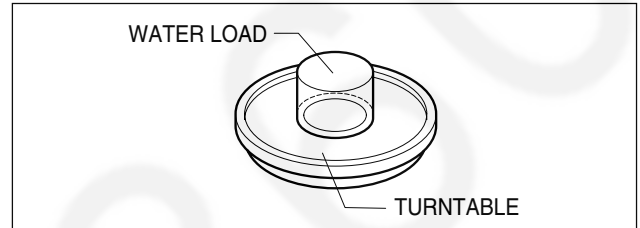
- Microwave power output measurement is made with the microwave oven supplied at its rated voltage and operated at its maximum microwave power setting with a load of  $(1000 \pm 5)$  g of potable water.
- The water is contained in a cylindrical borosilicate glass vessel having a maximum material thickness of 3 mm and an outside diameter of approximately 190mm.
- The oven and the empty vessel are at ambient temperature prior to the start of the test.
- The initial temperature ( $T_1$ ) of the water is  $(10 \pm 2)^\circ\text{C}$ . It is measured immediately before the water is added to the vessel. After addition of the water to the vessel, the load is immediately placed on the center of the turntable which is in the lowest position and the microwave power switched on.
- The time  $T$  for the temperature of the water to rise by a value  $\Delta T$  of  $(10 \pm 2)^\circ\text{K}$  is measured, where  $T$  is the time in seconds and  $\Delta T$  is the temperature rise. The initial and final water temperatures are selected so that the maximum difference between the final water temperature and the ambient temperature is  $5^\circ\text{K}$ .
- The microwave power output  $P$  in watts is calculated from the following formula :

$$P = \frac{4187 \times (\Delta T) + 0.55 \times (T_2 - T_0) \times M}{T}$$

- $T_2$ : Temperature after heating
- $T_0$ : Temperature of bowl
- $M$ : Weight of bowl

is measured while the microwave generator is operating at full power. Magnetron filament heat-up time is not included. (about 3 sec)

- The water is stirred to equalize temperature throughout the vessel, prior to measuring the final water temperature.
- Stirring devices and measuring instruments are selected in order to minimize addition or removal of heat.



## NOTES:

For simple tests of microwave power output, conduct it by heating one litre water for one minute, minimum temperature rise should be  $6^\circ\text{C}$

## DISASSEMBLY AND ADJUSTMENT

### A. OUTER CASE REMOVAL

- 1) Disconnect the power supply cord from the outlet.
- 2) Remove the screws from the rear and along side edges of the case.  
The outer case must be moved backward to be lifted off.

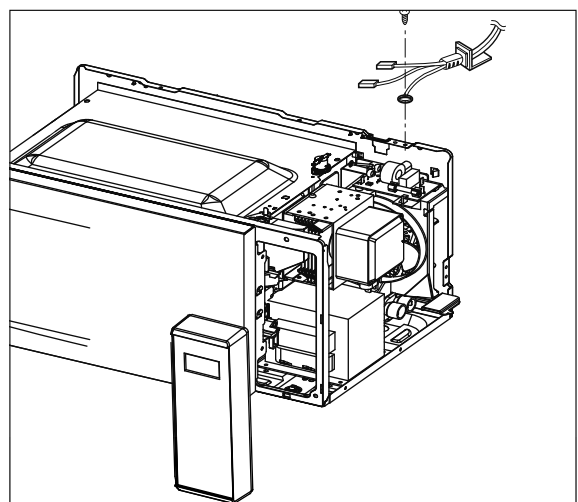
### B. POWER SUPPLY CORD

- 1) Remove the outer case.
- 2) Disconnect two terminals, and remove one screw of the earth terminal.

**CAUTION: DISCHARGE THE HIGH VOLTAGE CAPACITOR BEFORE SERVICING**  
(refer to page 2-1)

### C. CONTROL PANEL ASSEMBLY

- 1) Disconnect the leadwire from the Timer motor
- 2) Remove the screws for securing the control panel.
- 3) Lift control panel ASS 'Y' from the oven by the tab unhooked.



## D. DOOR ASSEMBLY REMOVAL

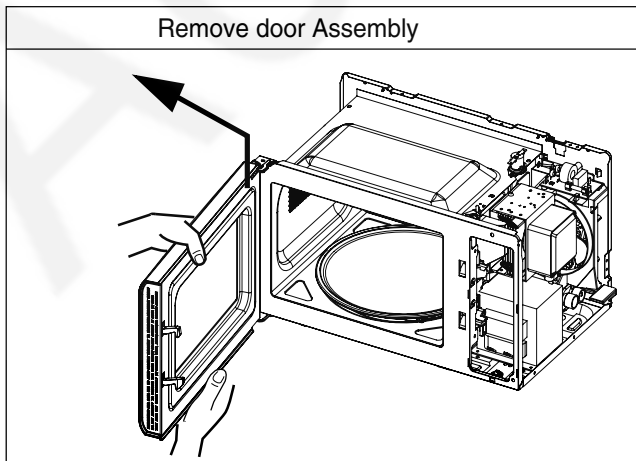
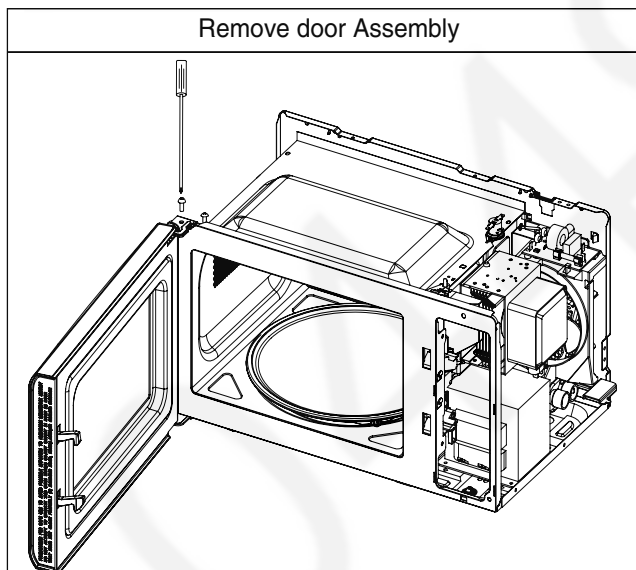
- 1) Open the door.
- 2) Remove two screws holding the Hinge to the Cavity Ass'y.

**CAUTION : Be careful not to damage Door C by screwdriver.**

- 3) Lift up and pull the door.

### NOTE:

1. After replacing the door, be sure to check that the primary switch, monitor switch, and secondary switch operate normally.
2. After replacing the door, check for microwave energy leakage with a survey meter. Microwave energy must be below the limit of 5 mW/cm<sup>2</sup>. (with a 275 ml water load)
3. When mounting the door assembly to the oven assembly, be sure to adjust the door assembly parallel to the chassis. Also adjust so the door has no play between the inner door surface and oven frame assembly. If the door assembly is not mounted properly, microwaves may leak from the clearance between the door and the oven.



## E. HIGH VOLTAGE TRANSFORMER REMOVAL

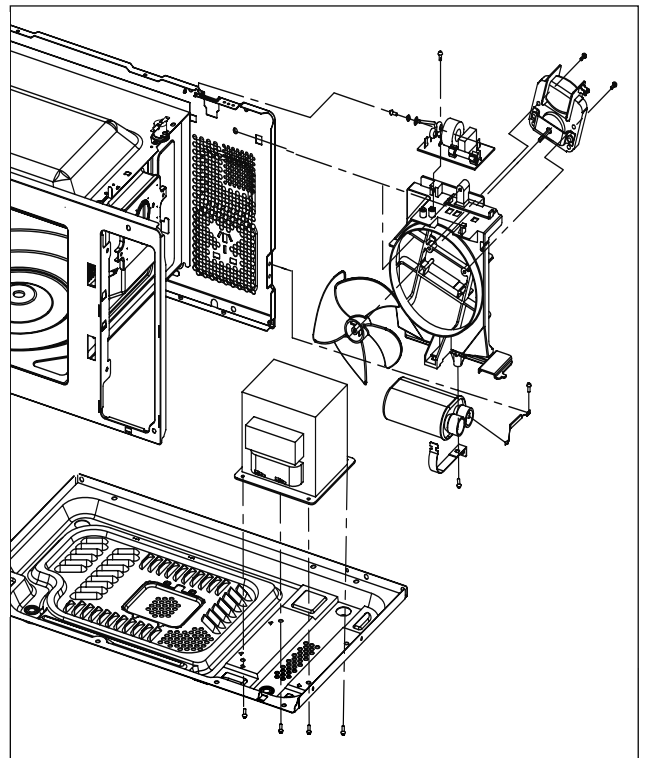
- 1) Discharge the high voltage capacitor.
- 2) Disconnect the leadwire from magnetron, high voltage transformer, and capacitor.
- 3) Remove the screw holding the high voltage transformer to the baseplate.

## F. ORIFICE ASSEMBLY REMOVAL

- 1) Discharge the high voltage capacitor.
- 2) Disconnect the leadwire from fan motor, noise filter and high voltage capacitor.
- 3) Remove the two screws holding the orifice ASS'Y to the oven cavity and remove the high voltage diode earth screw.
- 4) Remove the screw of the capacitor bracket.
- 5) Remove the two screws holding the fan motor ASS'Y to the Orifice ASS'Y.

## G. HIGH VOLTAGE CAPACITOR AND DIODE REMOVAL

- 1) Discharge the high voltage capacitor.
- 2) Disconnect the leadwire from fan motor, noise filter and high voltage capacitor.
- 3) Remove the screw holding the Orifice the oven earth screw.
- 4) Remove the screw holding the high voltage capacitor bracket.



## H. AIR GUIDE ASSEMBLY REMOVAL

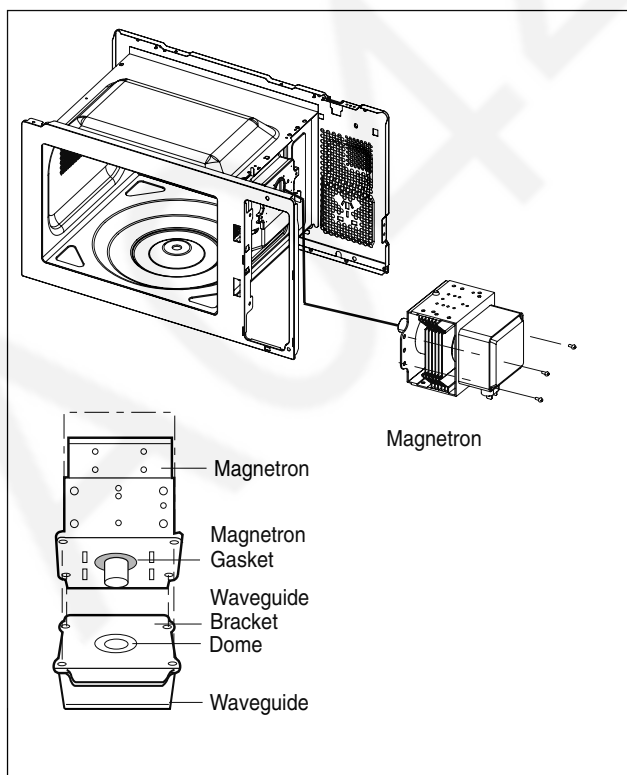
- 1) Disconnect the leadwire from lamp, A.C Relay and monitor resistor and magnetron.
- 2) Remove the screw to the cavity.

## I. MAGNETRON REMOVAL

- 1) Disconnect the leadwire from the high voltage transformer and high voltage capacitor.
- 2) Remove the air guide.
- 3) Carefully remove the mounting screws holding the magnetron and the waveguide.
- 4) Remove the magnetron until the tube is clear from the waveguide.

### NOTE:

1. When removing the magnetron, make sure its dome does not hit any adjacent parts, or it may be damaged.
2. When replacing the magnetron, be sure to install the magnetron gasket in the correct position and be sure that the gasket is in good condition.
3. After replacing the magnetron, check for microwave leakage with a survey meter around the magnetron. Microwave energy must be below the limit of 5 mW/cm<sup>2</sup>. (With a 275 ml. water load).  
**Make sure that gasket is rigidly attached to the magnetron.** To prevent microwave leakage, tighten the mounting screws properly, making sure there is no gap between the waveguide and the magnetron.

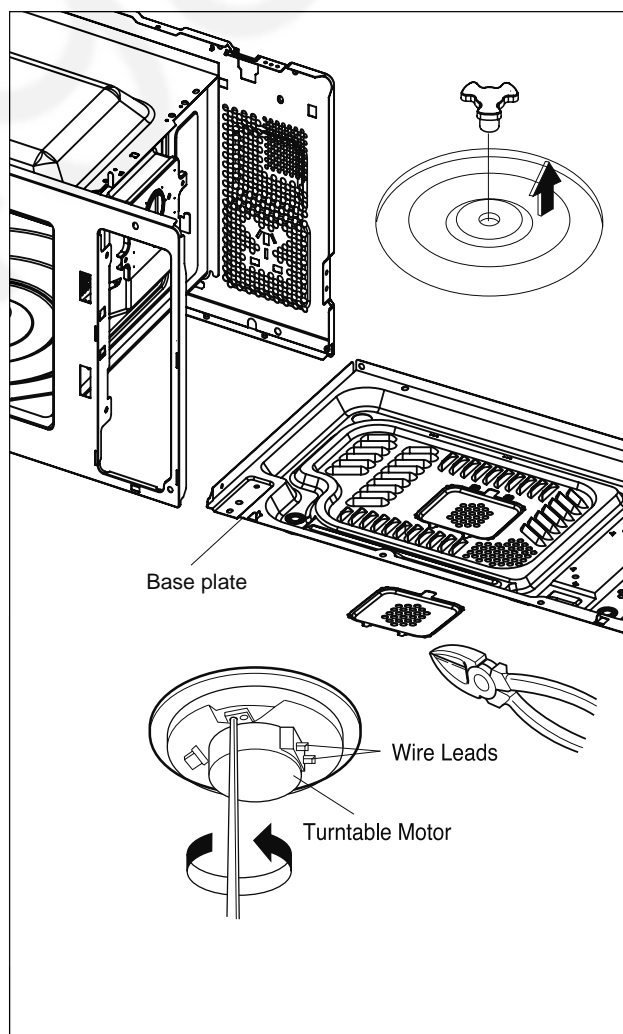


## J. REMOVING THE TURNTABLE MOTOR

- 1) Remove the glass tray.
- 2) Remove the pulley shaft **VERY CAREFULLY**
- 3) Lay the unit down on its back.
- 4) Remove the turntable motor cover.  
The turntable base cover is easily removed by pinching the six parts with a wire cutting.
- 5) Disconnect the leadwire from the turntable motor terminals.
- 6) Remove the screw securing the turntable motor to the oven cavity ASS'Y
- 7) After replacing the motor, rotate the removed turntable motor cover.
- 8) Fit the turntable motor cover's projecting part to the

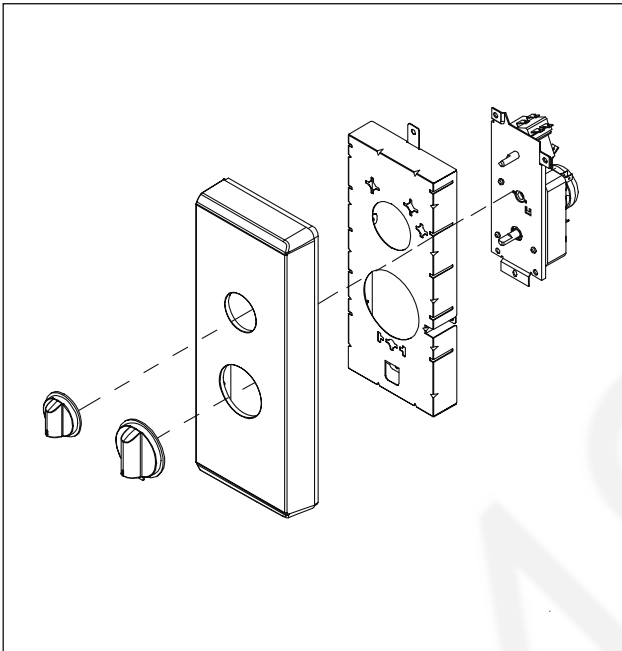
### NOTE:

1. Remove the wire lead from the turntable motor **VERY CAREFULLY**.
2. Be sure to grasp the connector, not the wires, when removing



## K. TIMER MOTOR REMOVAL

- 1) Remove the control panel assembly from the cavity.
- 2) Remove screws which hold the timer motor to the control panel.
- 3) Remove the timer motor from the control panel.
- 4) Remove the power control knob and the timer knob.

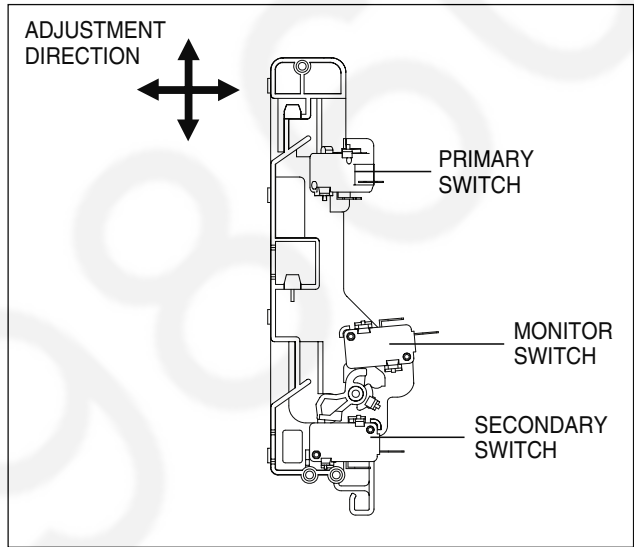


## L. INTERLOCK SYSTEM

### 1) INTERLOCK MECHANISM

The door lock mechanism is a device which has been specially designed to eliminate completely microwave activity when the door is opened during cooking and thus to prevent the danger resulting from the microwave leakage.

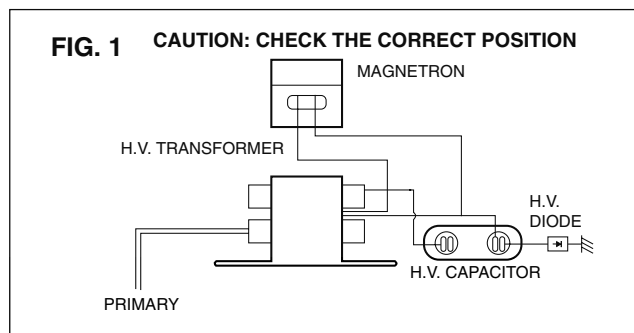
### 2) MOUNTING OF THE PRIMARY/MONITOR/SECONDARY SWITCHES TO THE LATCH BOARD



### 3) INSTALLATION AND ADJUSTMENT OF THE LATCH BOARD TO THE OVEN ASSEMBLY

- Mount the latch board to the oven assembly.
- Adjust the latch board in the arrow direction so that oven door will not have any play in it when the door is closed.
- Tighten the mounting screw.
- **Check for play in the door by pushing the door release button. Door movement should be less than 0.5 mm. (1/64 inch)**

Don't push the door release button while making adjustment. Make sure that the latch moves smoothly after adjustment are completed and that the screws are tight. Make sure the primary, monitor, and secondary switches operate properly by following the continuity test procedure.





# INTERLOCK CONTINUITY TEST

**WARNING : FOR CONTINUED PROTECTION AGAINST EXCESSIVE RADIATION EMISSION, REPLACE ONLY WITH IDENTICAL REPLACEMENT PARTS.**

TYPE NO. KW3A FOR SWITCHS

## A. PRIMARY INTERLOCK SWITCH TEST

When the door release button is depressed slowly with the door closed, an audible **click** should be heard at the same time or successively at intervals. When the button is released slowly, the latches should activate the switches with an audible **click**.

If the latches do not activate the switches when the door is closed, the switches should be adjusted in accordance with the adjustment procedure. Disconnect the wire lead from the primary switch. Connect the ohmmeter leads to the common (COM) and normally open (NO) terminal of the switch. The meter should indicate an open circuit in the door open condition. When the door is closed, the meter should indicate a closed circuit.

When the primary switch operation is abnormal, make the necessary adjustment or replace the switch only with the same type of switch.

## B. SECONDARY INTERLOCK SWITCH TEST

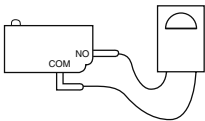


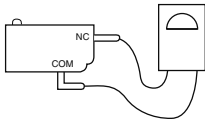


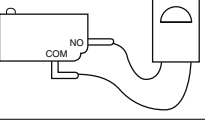


Disconnect the wire lead from the secondary switch.

Connect the ohmmeter leads to the common (COM) and normally open (NO) terminals of the switch. The meter should indicate a open circuit in the door open condition. When the door is closed, meter should indicate an closed circuit. When the secondary switch operation is abnormal, make the necessary adjustment or replace the switch only with the same type of switch.

## C. MONITOR SWITCH TEST

Disconnect the wire lead from the monitor switch. Connect the ohmmeter leads to the common (COM) and normally closed (NC) terminals of the switch. The meter should indicate closed circuit in the door open condition. When the door is closed, meter should indicate an open circuit. When the monitor switch operation is abnormal, replace with the same type of switch.

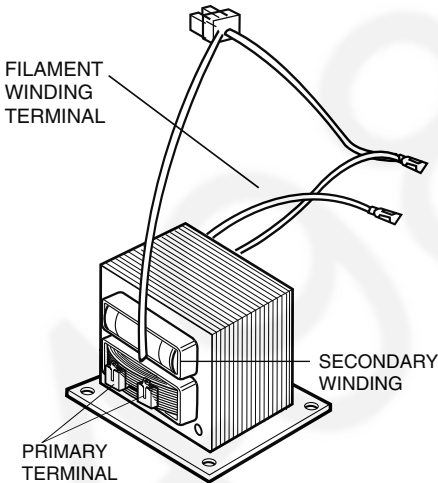
**NOTE: After repairing the door or the interlock system, it is necessary to do this continuity test before operating the oven.**

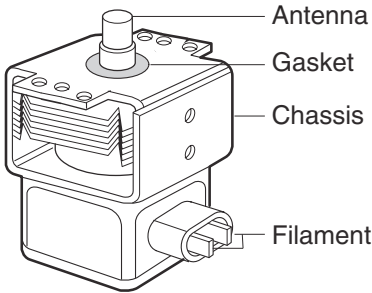
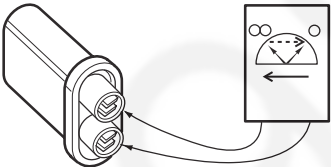
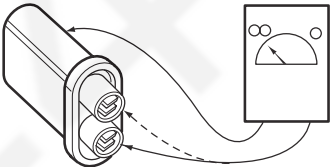
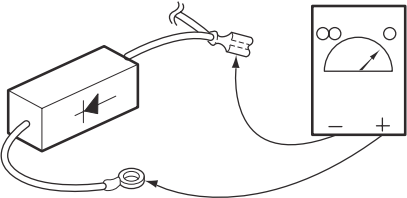
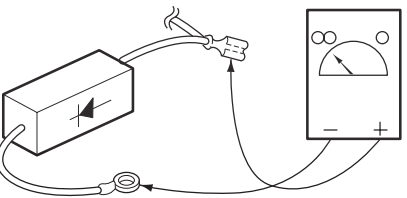
COMPONENTS	TEST PROCEDURE		RESULTS	
SWITCHES (Wire leads removed)	Check for continuity of the switch with an Ohm-meter		Door open	Door closed
	Primary Switch Type No.KW3A			
	Monitor Switch Type No.KW3A			
	Secondary Switch Type No.KW3A			
<b>NOTE :</b> After checking for the continuity of switches, make sure that are correctly connected.				

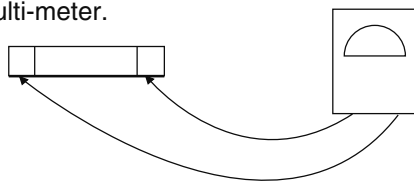
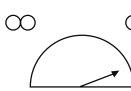
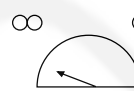
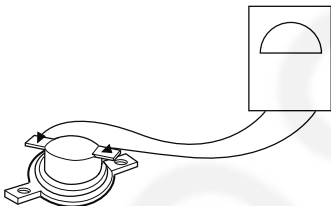


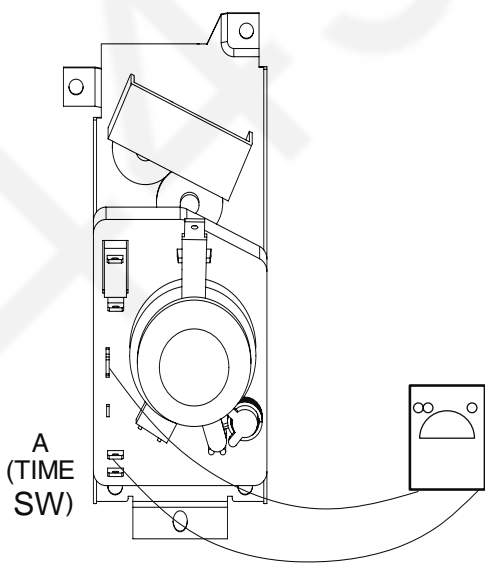
# COMPONENT TEST PROCEDURE

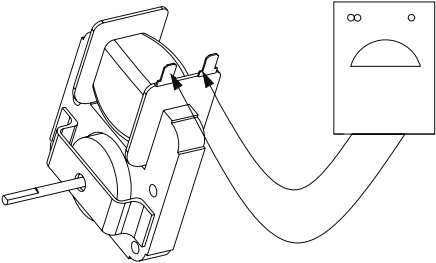
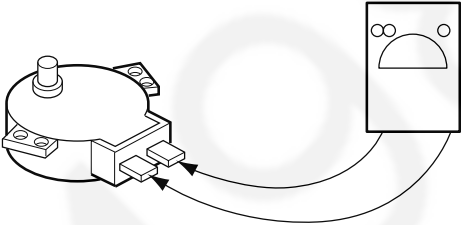
## CAUTIONS

1. DISCONNECT THE POWER SUPPLY CORD FROM THE OUTLET WHENEVER REMOVING THE OUTER CASE FROM THE UNIT. PROCEED WITH THE TEST ONLY AFTER DISCHARGING THE HIGH VOLTAGE CAPACITOR AND REMOVING THE WIRE LEADS FROM THE PRIMARY WINDING OF THE HIGH VOLTAGE TRANSFORMER. (SEE PAGE 2-1)
2. ALL OPERATIONAL CHECKS WITH MICROWAVE ENERGY MUST BE DONE WITH A LOAD (1 LITER OF WATER IN CONTAINER) IN THE OVEN.

COMPONENTS	TEST PROCEDURE	RESULTS
HIGH VOLTAGE TRANSFORMER (Wire leads removed)	 <ol style="list-style-type: none"><li>1. Measure the resistance. (Ohm-meter scale: Rx1) <ul style="list-style-type: none"><li>• Primary winding</li><li>• Secondary winding</li><li>• Filament winding</li></ul></li><li>2. Measure the resistance. (Ohm-meter scale: Rx1000) <ul style="list-style-type: none"><li>• Primary winding to ground</li><li>• Filament winding to ground</li></ul></li></ol>	<p>Approx.: 1.4 ohm Approx.: 90 ohm Less than: 1 ohm</p> <p>Normal: Infinite Normal: Infinite</p>
MAGNETRON (Wire leads removed)	<ol style="list-style-type: none"><li>1. Measure the resistance. (Ohm-meter scale: Rx1) <ul style="list-style-type: none"><li>• Filament terminal</li></ul></li><li>2. Measure the resistance. (Ohm-meter scale: Rx1000) <ul style="list-style-type: none"><li>• Filament to chassis</li></ul></li></ol>	<p>Normal: Less than 1 ohm</p> <p>Normal: Infinite</p>

COMPONENTS	TEST PROCEDURE	RESULTS
	 <p>NOTE: When testing the magnetron, be sure to install the magnetron gasket in the correct position and be sure that the gasket is in good condition.</p>	
HIGH VOLTAGE CAPACITOR	<p>Measure the resistance. (Ohm-meter scale: Rx1000)</p> <ul style="list-style-type: none"> <li>• Terminal to terminal.</li> </ul> 	Normal: Momentarily indicates several ohms, and then gradually returns to 10M ohms.
	<p>Measure the resistance. (Ohm-meter scale: Rx1000)</p> <ul style="list-style-type: none"> <li>• Terminal to case.</li> </ul> 	Normal: $\infty$
HIGH VOLTAGE DIODE	<p>Measure the continuity (Forward). (Ohm-meter scale: Rx10000)</p> 	Normal: Continuity. Abnormal: $\infty$ *
<p>*NOTE : Some inexpensive meters may indicate infinite resistance in both direction.</p>	<p>Measure the continuity (Reverse). (Ohm-meter scale: Rx10000)</p> 	Normal: $\infty$ Abnormal: Continuity.

COMPONENTS	TEST PROCEDURE	RESULTS	
FUSE	<div>Check for continuity of the fuse with an multi-meter.</div> <div></div>	Normal	Abnormal
		<div></div>	<div></div>
<div>NOTE: If the fuse is blown, check the primary, the secondary, and the monitor switches, H.V.D. and H.V.C. before replacing the fuse.</div> <div>If the fuse is blown by improper switch operation replace the defective switch and the fuse at the same time. Replace just the fuse if the switches operate normally.</div>			
THERMAL CUT-OUT	<div></div>	Below specified temperature	Above specified temperature
		<div></div>	<div></div>
TIMER MOTOR (Wire leads removed)	<div>Measure the resistance.</div> <div>(Ohm-meter scale: R x 1000)</div> <div></div>	<div>Normal: Approx. 10~30K <math>\Omega</math></div> <div>Abnormal: <math>\infty</math> or several <math>\Omega</math></div> <div>Note:</div> <div>A is TIME S/W and microwave ON/OFF</div>	

COMPONENTS	TEST PROCEDURE	RESULTS
FAN MOTOR (Wire leads removed)	Measure the resistance. (Ohm-meter scale: R x 100) 	Normal: 100~500 $\Omega$ Abnormal: $\infty$ or several $\Omega$
TURNTABLE MOTOR (Wire leads removed)	Measure the resistance. (Ohm-meter scale: R x 1000) 	Normal: Approx. 100~200K $\Omega$ Abnormal: $\infty$ or several $\Omega$
NOTE : • A MICROWAVE LEAKAGE TEST MUST ALWAYS BE PERFORMED WHEN THE UNIT IS SERVICED FOR ANY REASON. • MAKE SURE THE WIRE LEADS ARE IN THE CORRECT POSITION. • WHEN REMOVING THE WIRE LEADS FROM THE PARTS, BE SURE TO GRASP THE CONNECTOR, NOT THE WIRES.		

# TROUBLE SHOOTING

WHEN YOU GET A COMPLAINT FROM YOUR CUSTOMER, EVALUATE THE COMPLAINT CAREFULLY. IF THE FOLLOWING SYMPTOMS APPLY, PLEASE INSTRUCT THE CUSTOMER IN THE PROPER USE OF THE MICROWAVE OVEN. THIS CAN ELIMINATE AN UNNECESSARY SERVICE CALL.

## CAUTIONS

1. Check grounding before checking for trouble.
  2. Be careful of the high voltage circuit.
  3. Discharge the high voltage capacitor. (See page 2-1)
  4. When checking the continuity of the switches or of the high voltage transformer, disconnect one lead wire from these parts and then check continuity with the AC plug removed. To do otherwise may result in a false reading or damage to your meter.
  5. Do not touch any part of the circuitry on the digital programmer circuit since static electric discharge may damage this control panel.
- Always touch yourself ground while working on this panel to discharge any static charge built up in your body.

CONDITION	CAUSE	REMEDY
Microwave oven does not work.	Inserting many plug into one plug outlet and using them at the same time (causes overloading).	Avoid using other electrical appliances when you use the microwave oven.
	Microwave oven plug is not inserted tightly.	Insert microwave oven plug securely.
Output power is too low.	Low AC input voltage.	Use the microwave oven at adequate line voltage.
	Food temperature is too low.	This may not be a defect. It is possible that the food should be cooked for a longer time period.
Sparks occurring.	Using metallic ware and allowing it to touch the oven wall.	Do not use metallic ware for cooking except where noted in the cooking guide.
	Ceramic ware trimmed in gold or silver powder is used.	Do not use any type of cookware with metallic trimming.
Uneven cooking.	Inconsistent intensity of microwave by their characteristics.	<ol style="list-style-type: none"> <li>1. Wrap the thinner part with aluminum foil.</li> <li>2. Use plastic wrap or lid.</li> <li>3. Stir once or twice while cooking soup, cocoa or milk, etc.</li> </ol>
Turntable drags or makes noise.	Excessive weight on tray or improperly balanced.	Distribute food evenly. Cook smaller portions and, or use lighter weight cookware.

**(TROUBLE 1) Oven lamp does not turn on when the timer knob is rotated with door closed.**

CONDITION	CHECK	RESULT	CAUSE	REMEDY
1. Fuse blows.	Check continuity of monitor switch (with door closed).	Continuity.	Malfunction of the monitor switch.	Replace fuse, primary, monitor, and secondary switches.
		No continuity.		
	Replace fuse			
	Check continuity of primary switch (with door opened).	Continuity.	Shorted contact at the primary switch.	Replace fuse, primary, monitor, and secondary switches.
		No continuity.		
	Disconnect one side of the wire lead connected from transformer to the high voltage capacitor and operate the unit.	Normal.	Defective high voltage capacitor.	Replace high voltage capacitor.
			Fuse blows again	Defective high voltage transformer.

**This fuse is a special type of fuse which is kept as spare part by the importer.**

**NOTE :All these switches must be replaced at the same time.**

**(TROUBLE 2)Oven does not start even though the timer is set.**

CONDITION	CHECK	RESULT	CAUSE	REMEDY
1.Oven does not operate.	Check the continuity of the primary switch with door closed.	No continuity.	Malfunction of the primary switch.	Adjust or replace.
		Continuity.		
	Check the continuity of the secondary switch with secondary switch pushed.	No continuity.	Malfunction of the secondary switch.	Adjust or replace.
		Continuity.		
	Check the continuity of the timer switch contacts.	No continuity.	Malfunction of the timer switch.	Replace.
		Continuity.		
	Check the continuity of the thermostat.	No continuity.	Faulty thermostat.	Replace.
		Continuity.		

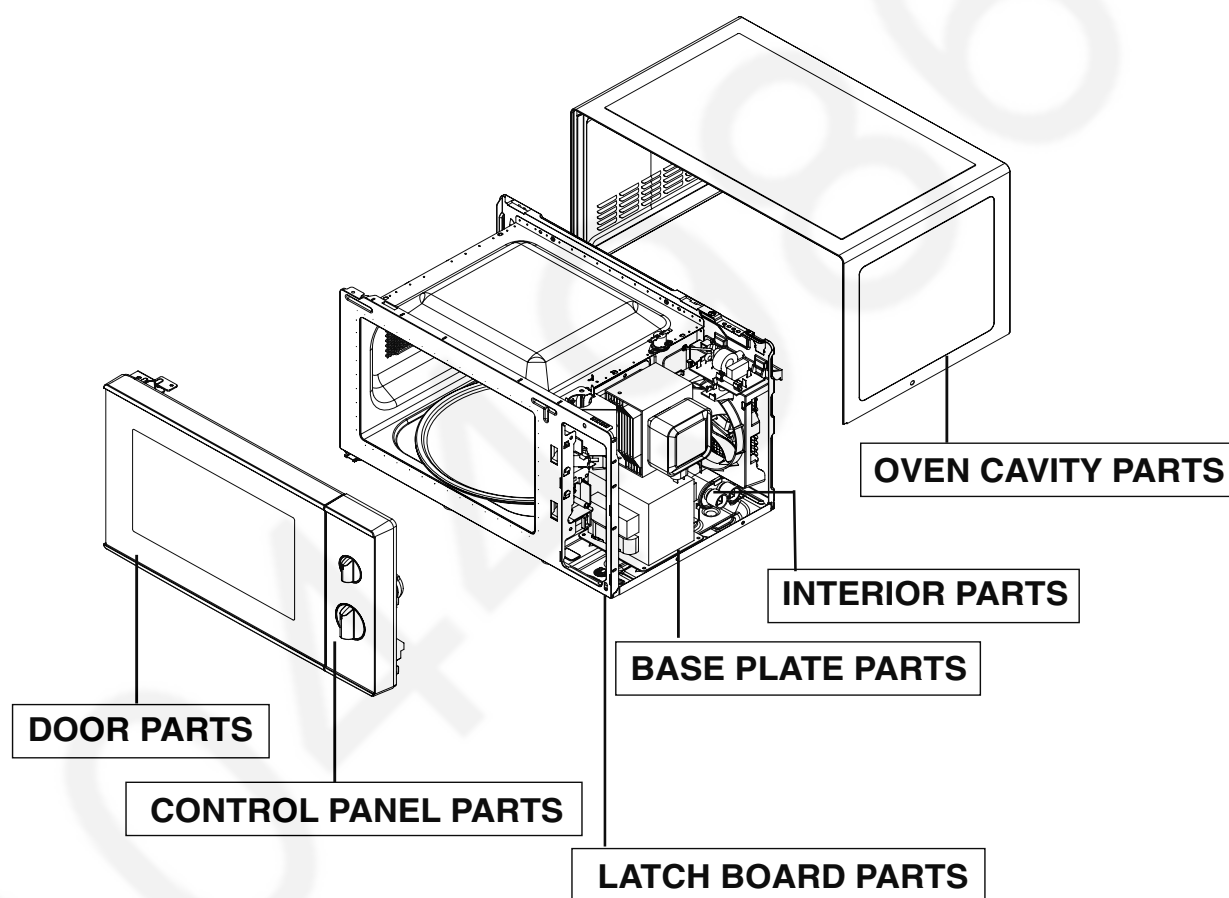


**(TROUBLE 3) Oven does not cook at all even though turntable rotates.**

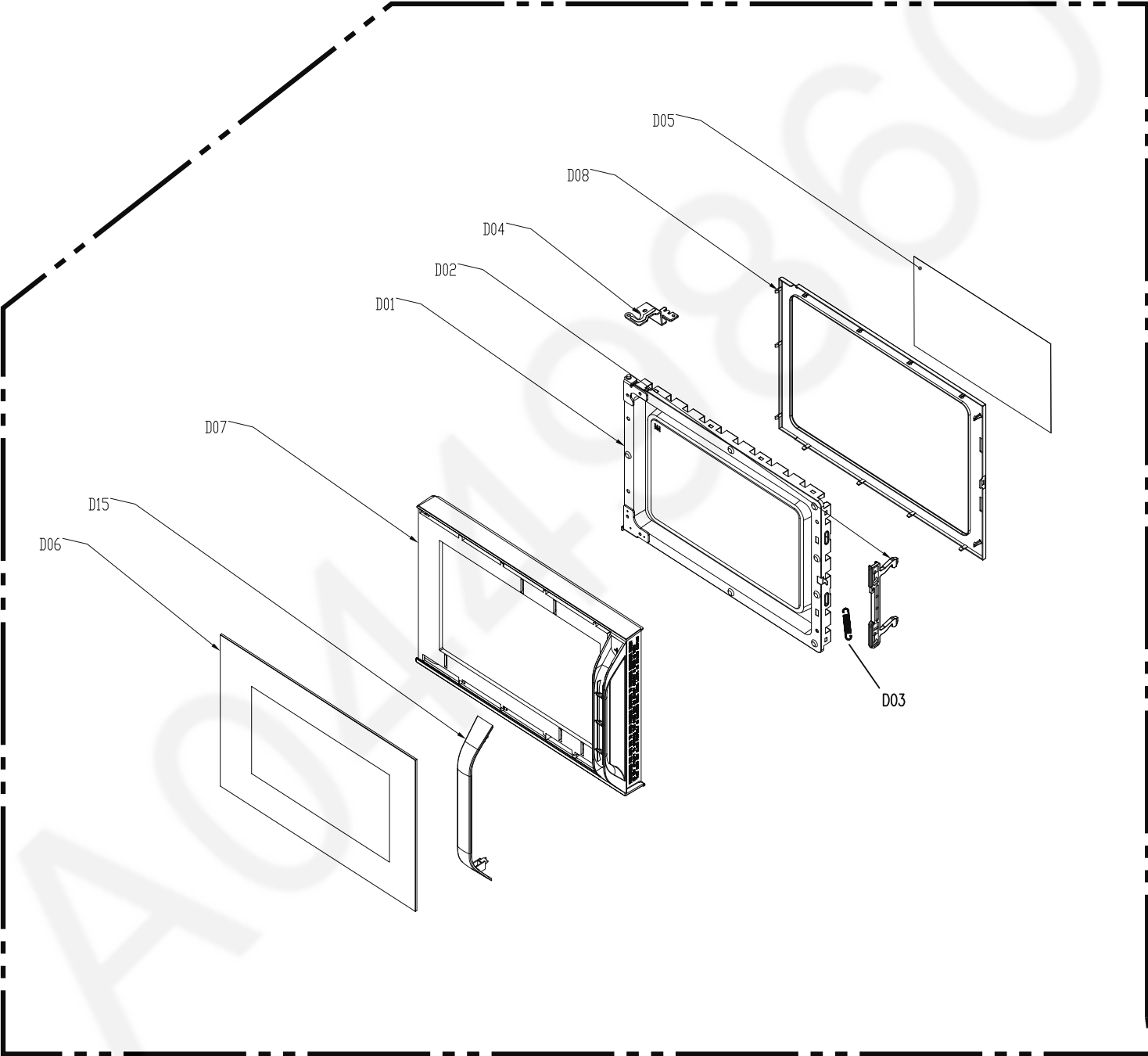
CONDITION	CHECK	RESULT	CAUSE	REMEDY
No microwave oscillation.	Check the timer switch of timer motor.(cooking state)	No continuity.	Malfunction of the power control switch.	Replace the power control switch.
		Continuity.		
	Check the monitor resistor.	Abnormal or burn out.	Defective monitor resistor.	Replace.
		Normal		
	Check the AC realy.	Abnormal	Defective AC relay.	Replace.
		Normal		
	Check the AC realy.	Abnormal	Open the secondary winding of the high voltage transformer of faulty insulation of filament winding.	Replace.
		Normal		
	Check H.V. diode.	Abnormal	Shorted H.V.diode	Replace.
		Normal		
	Check H.V. capacitor.	Abnormal	Faulty capacitor.	Replace.
		Normal		
	Magnetron	Abnormal	Faulty magnetron.	Replace.

# EXPLODED VIEW

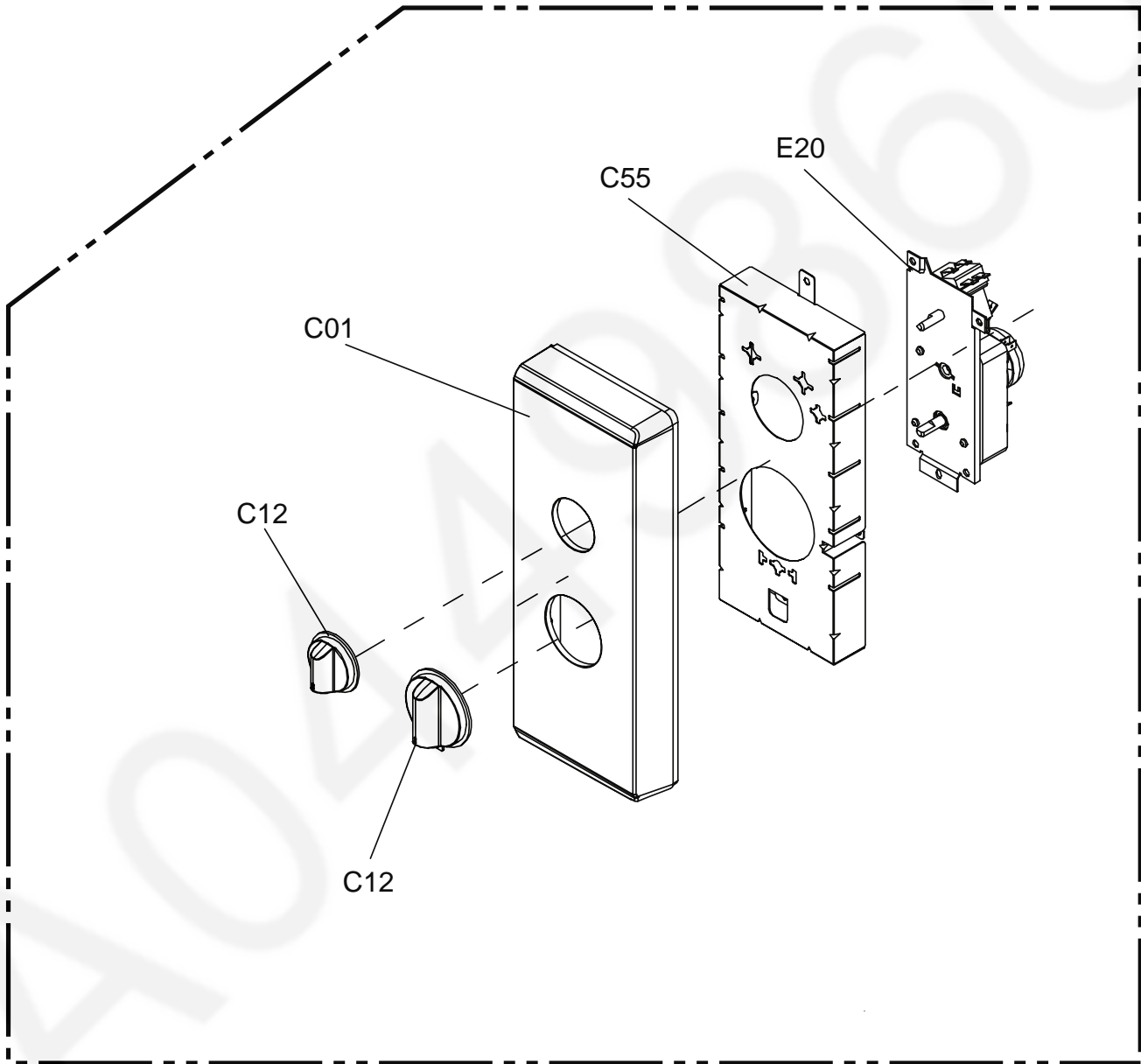
## INTRODUCTION



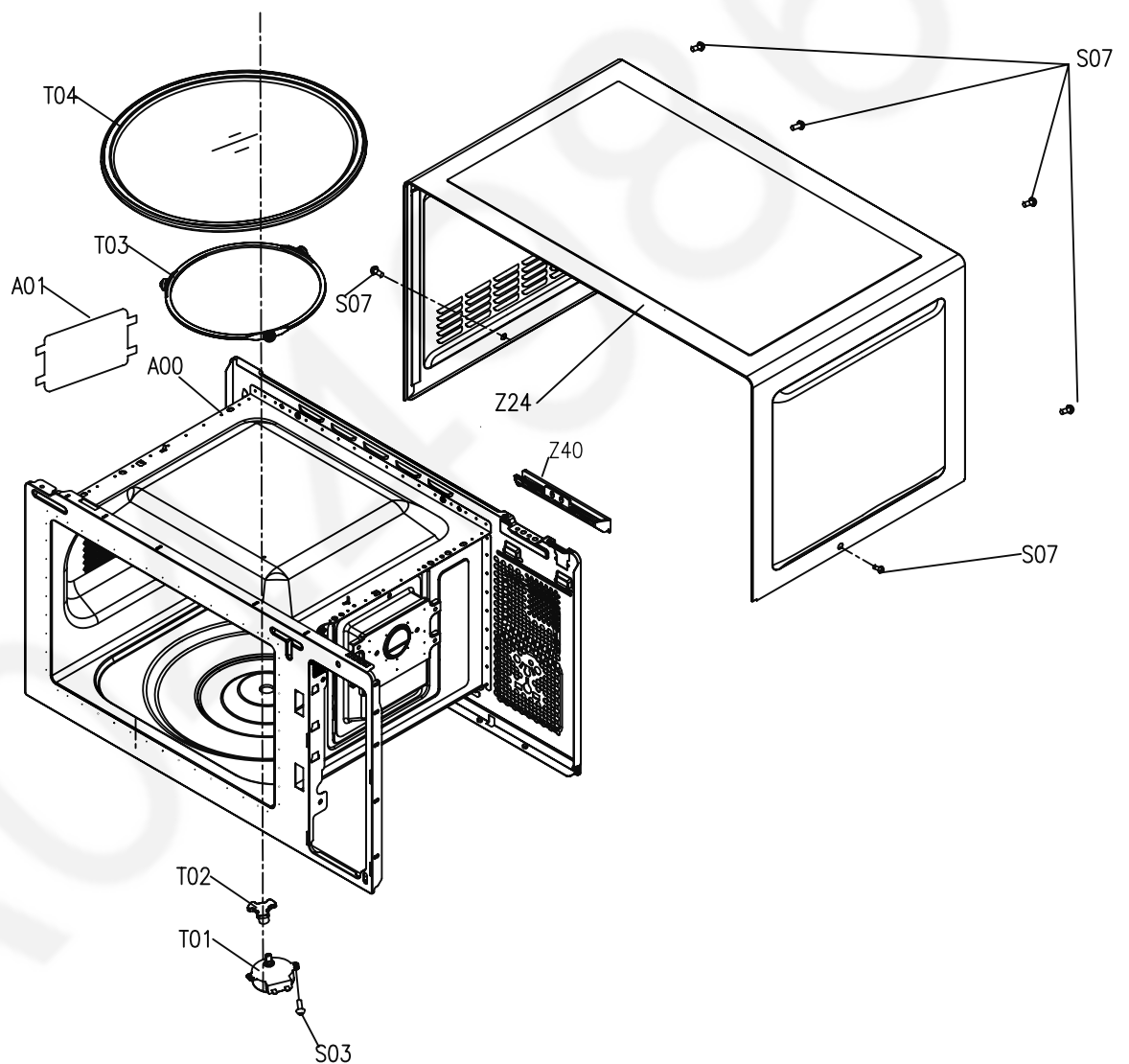
# DOOR PARTS



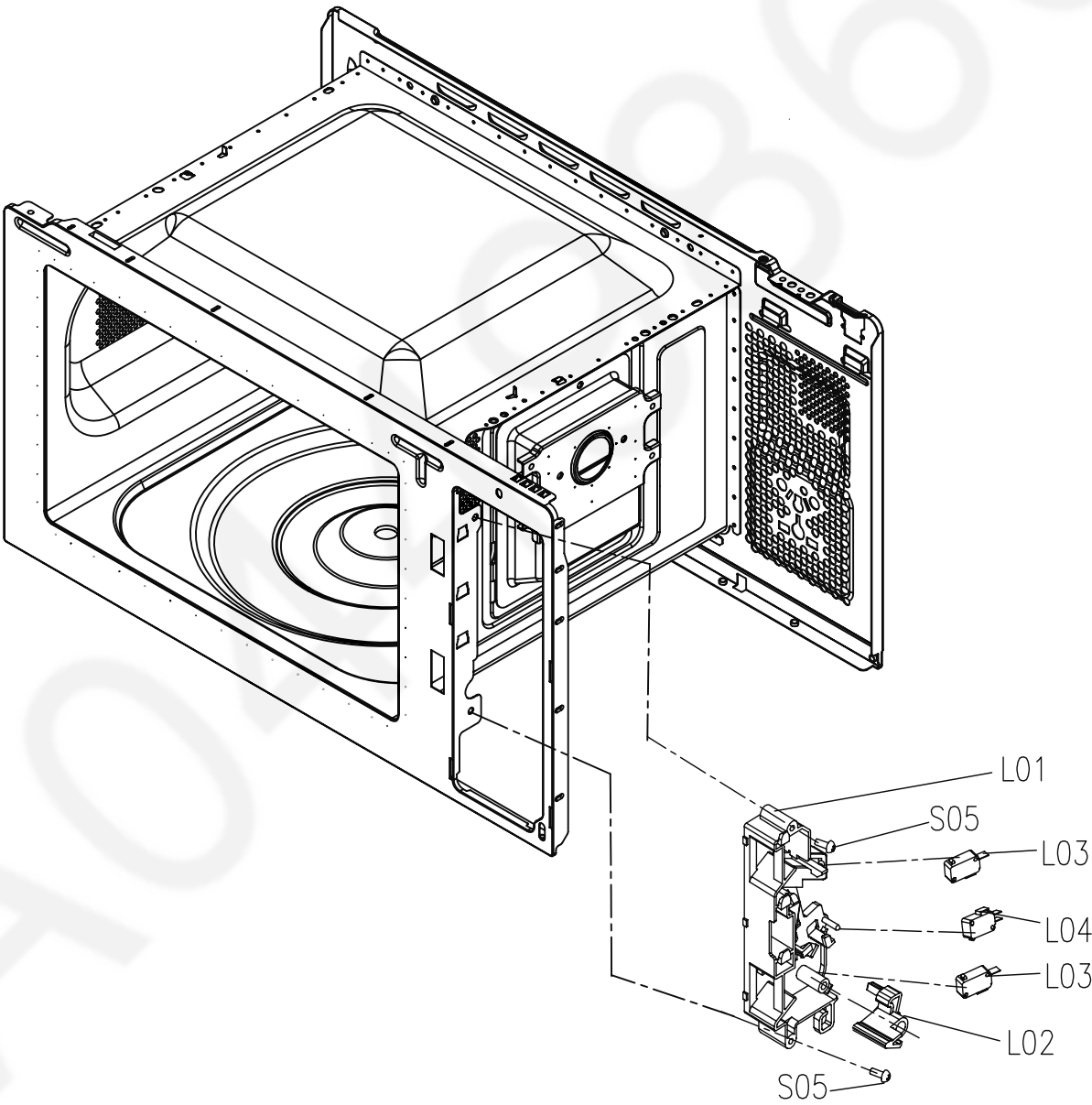
CONTROL PANEL PARTS



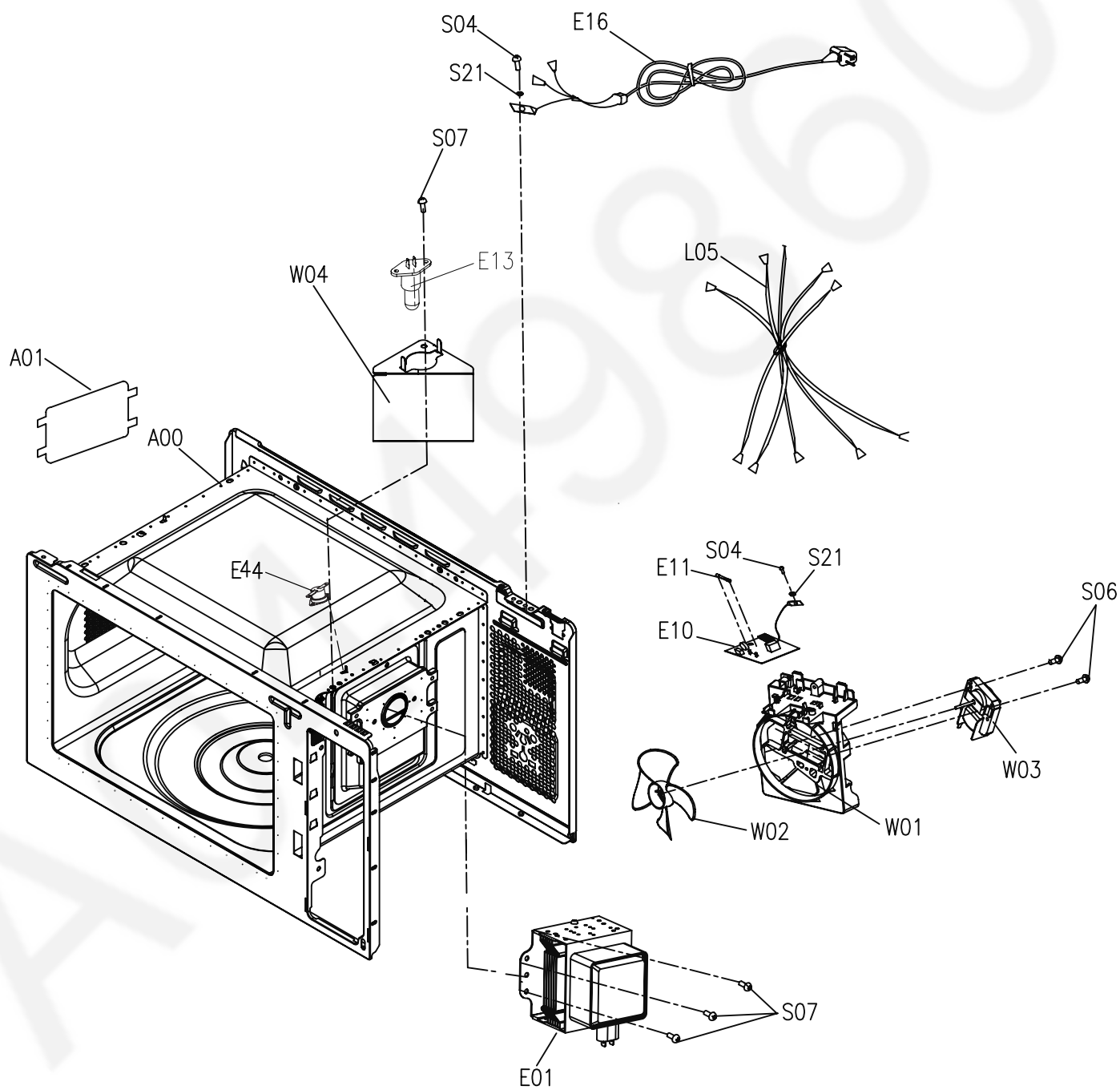
## OVEN CAVITY PARTS



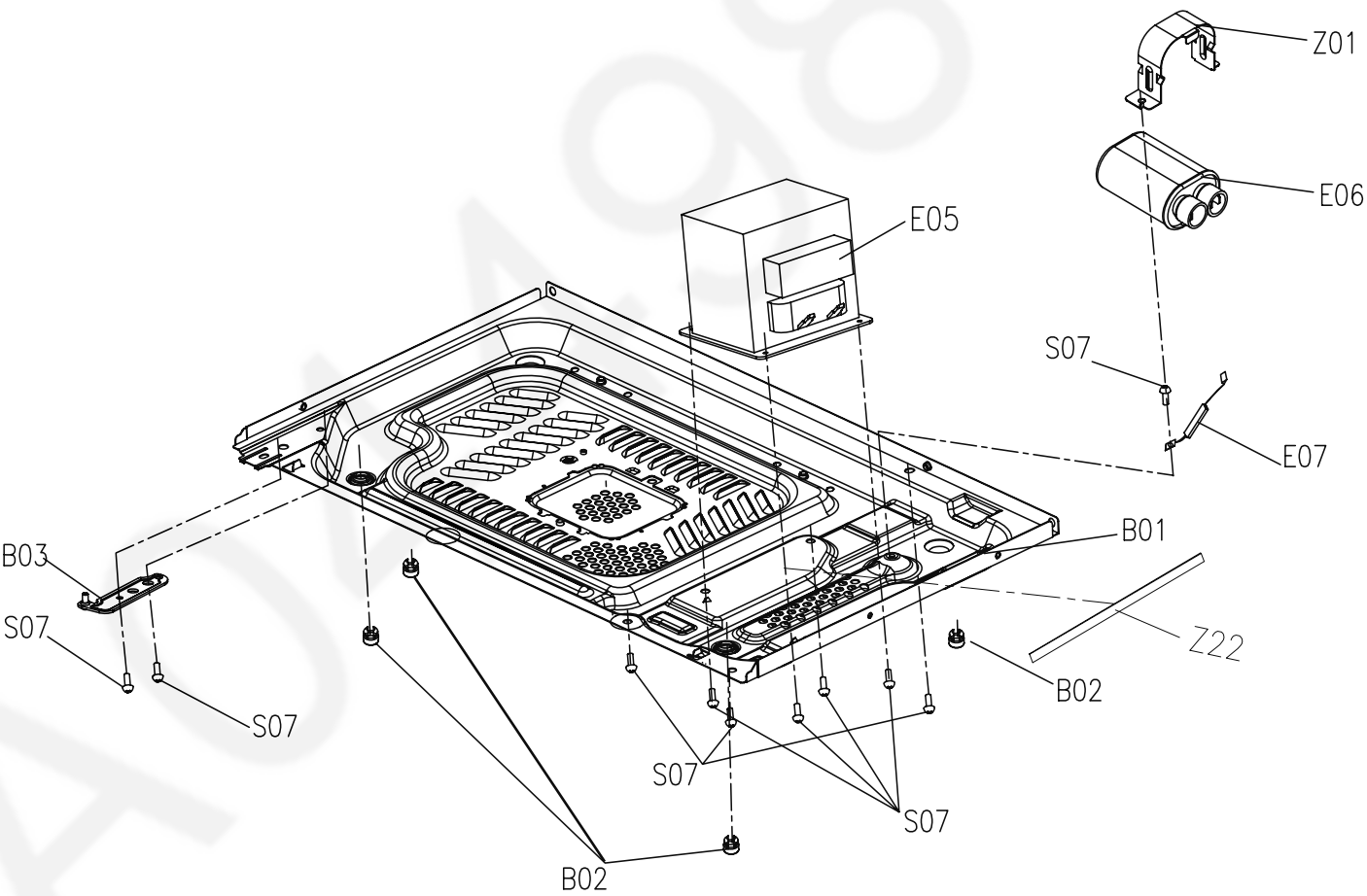
LATCH BOARD PARTS



# INTERIOR PARTS



BASE PLATE PARTS





# REPLACEMENT PARTS LIST

## NOTE:

- When ordering replacement part(s), please use part number(s) shown in this part list.  
Do not use description of the part.
- Important safety notice:  
Components identified by  $\Delta$  mark have special characteristics important for safety.  
When replacing any of these components, use only manufacture's specified parts.

## For Model: NN-SN32HMYTE

Safety	Ref. No.	Part No.	Part Name & Description	Pcs/Set	Remarks
	A00	A200A46D0MP	OVEN CAVITY	1	
	A01	A205546F0MP	CEILING COVER	1	
	B01	A100146B0MP	BASE	1	
	B02	A100841V0ZP	RUBBER FOOT	4	
	B03	A300741V0ZP	LOWER HINGE	1	
	C01	A803446G0MMP	ESCUTCHEON BASE	1	
	C12	A803946F0MMP	TIMER KNOB	2	
	C55	A812741U0ZP	ESCUT.BACK PLATE	1	
$\Delta$	E20	A600141U0ZP	TIMER SWITCH	1	
$\Delta$	D01+D05	A302K41V0ZP	DOOR E UNIT	1	
	D02	A301841V0ZP	DOOR KEY A	1	
	D03	A323041V0ZP	DOOR KEY SPRING	1	
	D04	A317641V0ZP	TOP DOOR HINGE	1	
	D05	A31457W50BP	DOOR SCREEN A	1	
$\Delta$	D06+D07+D15	A302A46B0MMP	Door AU(Door A + Screen B) : Silver	1	ScreenB : Black
$\Delta$	D08	A308541V0ZP	DOOR C	1	
$\Delta$	E01	2M217J	MAGNETRON	1	
$\Delta$	E05	A600B41U0TT	H.V.TRANSFORMER	1	
$\Delta$	E06	A609041U0TT	H.V. CAPACITOR	1	
$\Delta$	E07	A620241V0ZP	DIODE, SI	1	
$\Delta$	E10	A692Y41V1ZP	NOISE FILTER	1	
$\Delta$	E11	A623040N0BP	FUSE	1	
	E13	A612E7W50BP	LAMP UNIT	1	
$\Delta$	E16	A900C41U0YP	AC CORD W/PLUG	1	
$\Delta$	E44	A614541T0ZP	THERMAL CUTOFF(OVEN)	1	120°C/0°C
$\Delta$	L01	A302041V0ZP	DOOR HOOK A	1	
	L02	A313641V0ZP	HOOK SPACER	1	
$\Delta$	L03	A614141V0ZP	MICROSWITCH	2	
$\Delta$	L04	A614241V0ZP	MICROSWITCH(MONITOR SWITCH)	1	
$\Delta$	L05	A030A41U0ZP	LEAD WIRE HARNESS	1	
	T01	A632641V0ZP	TURNTABLE MOTOR	1	
	T02	A213140N0BP	PULLY SHAFT	1	
	T03	A290D41V0ZP	ROLLER RING(U)	1	
	T04	A060141V0ZP	COOKING TRAY	1	
	W01	A414441V0ZP	ORIFICE	1	
	W02	A400841V0ZP	FAN BLADE	1	
	W03	A400A41V0ZP	FAN MOTOR	1	
	W04	A402541V0ZP	AIR GUIDE A	1	
	Z01	A618841V0ZP	BRACKET, H.V CAPACITOR	1	
	Z22	A09047W50BP	CUSHION RUBBER	1	Baseplate
	Z24	A110D46B0MMP	CABINET BODY(U)	1	
	Z40	A488540N0BP	BRACKET, WATER SEALING	1	
		A010441V0ZP	UPPER FILLER	1	
		A010541V0ZP	LOWER FILLER	1	
		A010641V0ZP	VINYL BAG	1	
		A010246G0MMP	CARTON BOX	1	
		A000346D0MP	OPERATING INSTRUCTION	1	
		A000641T0MP	WARNING LABEL	1	

## For Model: NN-SN33HMYTE

Safety	Ref. No.	Part No.	Part Name & Description	Pcs/Set	Remarks
	A00	A200A46D0MP	OVEN CAVITY	1	
	A01	A205546F0MP	CEILING COVER	1	
	B01	A100146B0MP	BASE	1	
	B02	A100841V0ZP	RUBBER FOOT	4	
	B03	A300741V0ZP	LOWER HINGE	1	
	C01	A803446F0MMP	ESCUTCHEON BASE	1	
	C12	A803946F0MMP	TIMER KNOB	2	
	C55	A812741U0ZP	ESCUT.BACK PLATE	1	
⚠	E20	A600141U0ZP	TIMER SWITCH	1	
⚠	D01+D05	A302K41V0ZP	DOOR E UNIT	1	
	D02	A301841V0ZP	DOOR KEY A	1	
	D03	A323041V0ZP	DOOR KEY SPRING	1	
	D04	A317641V0ZP	TOP DOOR HINGE	1	
	D05	A31457W50BP	DOOR SCREEN A	1	
⚠	D06+D07+D15	A302A46B0MMP	Door AU(Door A + Screen B) : Silver	1	ScreenB : Black
⚠	D08	A308541V0ZP	DOOR C	1	
⚠	E01	2M219J	MAGNETRON	1	
⚠	E05	A600B41V0ZP	H.V.TRANSFORMER	1	
⚠	E06	A609040N0BP	H.V. CAPACITOR	1	
⚠	E07	A620241V0ZP	DIODE, SI	1	
⚠	E10	A692Y41V1ZP	NOISE FILTER	1	
⚠	E11	A623040N0BP	FUSE	1	
	E13	A612E7W50BP	LAMP UNIT	1	
⚠	E16	A900C41U0YP	AC CORD W/PLUG	1	
⚠	E44	A614541T0ZP	THERMAL CUTOUT(OVEN)	1	120°C/0°C
⚠	L01	A302041V0ZP	DOOR HOOK A	1	
	L02	A313641V0ZP	HOOK SPACER	1	
⚠	L03	A614141V0ZP	MICROSWITCH	2	
⚠	L04	A614241V0ZP	MICROSWITCH(MONITOR SWITCH)	1	
⚠	L05	A030A41U0ZP	LEAD WIRE HARNESS	1	
	T01	A632641V0ZP	TURNABLE MOTOR	1	
	T02	A213140N0BP	PULLY SHAFT	1	
	T03	A290D41V0ZP	ROLLER RING(U)	1	
	T04	A060141V0ZP	COOKING TRAY	1	
	W01	A414441V0ZP	ORIFICE	1	
	W02	A400841V0ZP	FAN BLADE	1	
	W03	A400A41V0ZP	FAN MOTOR	1	
	W04	A402541V0ZP	AIR GUIDE A	1	
	Z01	A618841V0ZP	BRACKET, H.V CAPACITOR	1	
	Z22	A09047W50BP	CUSHION RUBBER	1	Baseplate
	Z24	A110D46B0MMP	CABINET BODY(U)	1	
	Z40	A488540N0BP	BRACKET, WATER SEALING	1	
		A010441V0ZP	UPPER FILLER	1	
		A010541V0ZP	LOWER FILLER	1	
		A010641V0ZP	VINYL BAG	1	
		A010246F0MMP	CARTON BOX	1	
		A000346D0MP	OPERATING INSTRUCTION	1	
		A000641T0MP	WARNING LABEL	1	

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